

IN THE CLAIMS:

The text of all pending claims is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 9, 12-20, 23-28, 41, 45-52 and 56-61 in accordance with the following:

1-8. (Cancelled).

9. (Currently Amended) A display device comprising:

a liquid crystal display layer which comprises an array of pixels arranged in a matrix and forms an image to be displayed; and

a light reflecting optical film which is arranged on a rear surface of the liquid crystal display layer and comprises an array of diffraction grating cells arranged in a matrix, each cell comprising blazed type or binary type curved gratings having the same profile and arranged in parallel, and being formed by arranging substantially identical curved lines in the form of a sector of a circle, the curved lines being separated at regular intervals, the interval having a horizontal component and a vertical component,

wherein each side of each diffraction grating cell measures between about 5 μm and about 300 μm , and

wherein said diffraction grating cells are located at positions corresponding to the pixels.

10. (Previously Presented) The display device according to claim 9, wherein said gratings of different grating cells contain different profiles.

11. (Cancelled)

12. (Currently Amended) The display device according to one of claims 9 ~~to 11~~ or 10, wherein said gratings of each of the grating cells include at least two grating pitches.

13. (Currently Amended) The display device according to one of claims 9 ~~to 11~~ or 10, wherein an angle of a slope of the gratings of different grating cells is uniform.

14. (Currently Amended) The display device according to one of claims ~~9 to 11~~ or 10, wherein a surface of said diffraction grating cells of each of the grating cells is provided with a reflection layer.

15. (Currently Amended) The display device according to one of claims ~~9 to 11~~ or 10, wherein each of the gratings of each of the grating cells has a gentle slope and a steep slope in a cross section and a surface of the gentle slope is provided with a reflection layer.

16. (Currently Amended) The display device according to one of claims ~~9 to 11~~ or 10, wherein fine rectangular or elliptic projections or recesses are formed on a surface of said diffraction grating cells with a short axis thereof agreeing with a direction of juxtaposition of said gratings.

17. (Currently Amended) The display device according to one of claims ~~9 to 11~~ or 10, wherein
said diffraction grating cells and said array of pixels show a one-to-one correspondence.

18. (Currently Amended) The display device according to one of claims ~~9 to 11~~ or 10, wherein
said liquid crystal display layer comprises an array of pixels arranged in a matrix; and
a pitch of said array of diffraction grating cells is an integral multiple of a pitch of said array of said pixels or vice versa.

19. (Currently Amended) The display device according to one of claims ~~9 to 11~~ or 10, wherein each of the gratings of each of the grating cells has a gentle slope and a steep slope in a cross section and the gentle slope is directed to above a display screen of said display device.

20. (Currently Amended) A display device comprising:
a liquid crystal display layer which comprises an array of pixels arranged in a matrix and forms an image to be displayed; and
a light transmission optical film which is arranged on a front surface of the liquid crystal display layer and comprises an array of diffraction grating cells arranged in a matrix, each cell comprising blazed type or binary type curved gratings having the same profile and arranged in

parallel, and being formed by arranging substantially identical curved lines in the form of a sector of a circle, the curved lines being separated at regular intervals, the interval having a horizontal component and a vertical component,

wherein each side of each diffraction grating cell measures between about 5 μm and about 300 μm , and

wherein said diffraction grating cells are located at positions corresponding to the pixels.

21. (Previously Presented) The display device according to claim 20, wherein said gratings of different grating cells contain different profiles.

22. (Cancelled)

23. (Currently Amended) The display device according to one of claims 20 ~~to 22~~ or 21, wherein said gratings of each of the grating cells include at least two grating pitches.

24. (Currently Amended) The display device according to one of claims 20 ~~to 22~~ or 21, wherein an angle of a slope of the gratings of different grating cells is uniform.

25. (Currently Amended) The display device according to one of claims 20 ~~to 22~~ or 21, wherein fine rectangular or elliptic projections or recesses are formed on a surface of said diffraction grating cells with a short axis thereof agreeing with a direction of juxtaposition of said gratings.

26. (Currently Amended) The display device according to one of claims 20 ~~to 22~~ or 21, wherein

said array of diffraction grating cells and said array of pixels show a one-to-one correspondence.

27. (Currently Amended) The display device according to one of claims 20 ~~to 22~~ or 21, wherein

said liquid crystal display layer comprises an array of pixels arranged in a matrix; and
a pitch of said array of diffraction grating cells is an integral multiple of a pitch of said array of said pixels or vice versa.

28. (Currently Amended) The display device according to one of claims ~~20 to 22~~ or 21, wherein each of the gratings of each of the grating cells has a gentle slope and a steep slope in a cross section and the gentle slope is directed to above a display screen of said display device.

29-40. (Cancelled)

41. (Currently Amended) A display device comprising:
a liquid crystal display layer which comprises an array of pixels arranged in a matrix and forms an image to be displayed; and

a light reflecting optical film which is arranged on a rear surface of the liquid crystal display layer and comprises an array of diffraction grating cells arranged in a matrix, each cell comprising curved gratings having the same profile and arranged in parallel, and being formed by arranging substantially identical curved lines in the form of a sector of a circle, the curved lines being separated at regular intervals, the interval having a horizontal component and a vertical component,

wherein said gratings of each of the grating cells include at least two grating pitches,
wherein each side of each diffraction grating cell measures between about 5 μm and about 300 μm , and

wherein said diffraction grating cells are located at positions corresponding to the pixels.

42. (Previously Presented) The display device according to claim 41, wherein said gratings of different grating cells contain different profiles.

43. (Cancelled)

44. (Cancelled)

45. (Currently Amended) The display device according to one of claims ~~41 to 43~~ or 42, wherein an angle of a slope of the gratings of different grating cells is uniform.

46. (Currently Amended) The display device according to one of claims ~~41 to 43~~ or 42, wherein a surface of said diffraction grating cells of each of the grating cells is provided with a reflection layer.

47. (Currently Amended) The display device according to one of claims ~~41 to 43~~ or 42, wherein each of the gratings of each of the grating cells has a gentle slope and a steep slope in a cross section and a surface of the gentle slope is provided with a reflection layer.

48. (Currently Amended) The display device according to one of claims ~~41 to 43~~ or 42, wherein fine rectangular or elliptic projections or recesses are formed on a surface of said diffraction grating cells with a short axis thereof agreeing with a direction of juxtaposition of said gratings.

49. (Currently Amended) The display device according to one of claims ~~41 to 43~~ or 42, wherein
said array of diffraction grating cells and said array of pixels show a one-to-one correspondence.

50. (Currently Amended) The display device according to one of claims ~~41 to 43~~ or 42, wherein
said liquid crystal display layer comprises an array of pixels arranged in a matrix; and
a pitch of said array of said diffraction grating cells is an integral multiple of a pitch of said array of said pixels or vice versa.

51. (Currently Amended) The display device according to one of claims ~~41 to 43~~ or 42, wherein each of the gratings of each of the grating cells has a gentle slope and a steep slope in a cross section and the gentle slope is directed to above a display screen of said display device.

52. (Currently Amended) A display device comprising:
a liquid crystal display layer which comprises an array of pixels arranged in a matrix and forms an image to be displayed; and

a light transmission optical film which is arranged on a front surface of the liquid crystal display layer and comprises an array of diffraction grating cells arranged in a matrix, each cell comprising curved gratings having the same profile and arranged in parallel, and being formed by arranging substantially identical curved lines in the form of a sector of a circle, the curved lines being separated at regular intervals, the interval having a horizontal component and a vertical component,

wherein said gratings of each of the grating cells are arranged by at least two pitches,
wherein each side of each diffraction grating cell measures between about 5 μm and about 300 μm , and
wherein said diffraction grating cells are located at positions corresponding to the pixels.

53. (Previously Presented) The display device according to claim 52, wherein said gratings of different grating cells contain different profiles.

54. (Cancelled)

55. (Cancelled)

56. (Currently Amended) The display device according to one of claims 52 ~~to 54~~ or 53, wherein an angle of a slope of the gratings of different grating cells is uniform.

57. (Currently Amended) The display device according to one of claims 52 ~~to 54~~ or 53, wherein fine rectangular or elliptic projections or recesses are formed on a surface of said diffraction grating cells with a short axis thereof agreeing with a direction of juxtaposition of said gratings.

58. (Currently Amended) The display device according to one of claims 52 ~~to 54~~ or 53, wherein

said array of diffraction grating cells and said array of pixels show a one-to-one correspondence.

59. (Currently Amended) The display device according to one of claims 52 ~~to 54~~ or 53, wherein

said liquid crystal display layer comprises an array of pixels arranged in a matrix; and

a pitch of said array of said diffraction grating cells is an integral multiple of a pitch of said array of said pixels or vice versa.

60. (Currently Amended) The display device according to one of claims 52 to 54 or 53, wherein each of the gratings of each of the grating cells has a gentle slope and a steep slope in a cross section and the gentle slope is directed to above a display screen of said display device.

61. (Currently Amended) A display device comprising:
a liquid crystal display layer which comprises any array of pixels arranged in a matrix and forms an image to be displayed;

a plurality of drive electrodes in proximity to the liquid crystal display layer; and

a light reflecting optical film including a plurality of diffraction grating cells arranged in a matrix, each of the diffraction grating cells including at least one of a blazed type and a binary type grating having the same profile and arranged in parallel, and being formed by arranging substantially identical curved lines in the form of a sector of a circle, the curved lines being separated at regular intervals, the interval having a horizontal component and a vertical component,

wherein the drive electrodes form the light reflecting optical film, and

wherein each of the drive electrodes includes one of the diffraction grating cells, and

wherein each side of each diffraction grating cell measures between about 5 μm and about 300 μm , and

wherein said diffraction grating cells are located at positions corresponding to the pixels.